AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-13 cancelled.

14. (new) An analysis method of impurities and color centers in fluoride characterized in that the method comprises the steps of:

irradiating X-rays to a material comprising a part taken out of fluoride in a fused state in a melt process as a preprocess for a growth process of a single crystal comprising the fluoride;

comparing light transmittances of the material before and after the irradiation of X-rays with each other, thereby analyzing impurities and color centers in the material, to thereby determine a melt condition; and

then conducting growth of crystal.

- 15. (new) The analysis method of impurities and color centers in fluoride, characterized in that the fluoride is one of calcium fluoride, barium fluoride, and magnesium fluoride.
- 16. (new) The analysis method of impurities and color centers in fluoride of claim 15, characterized in that annealing is conducted before the X-ray irradiation.
- 17. (new) The analysis method of impurities and color centers in fluoride of claim 16, characterized in that the annealing is conducted at 300 to 400°C.

- 18. (new) The analysis method of impurities and color centers in fluoride of claim 16, characterized in that the annealing is conducted for 30 minutes to 2 hours.
- 19. (new) The analysis method of impurities and color centers in fluoride of any one of claim 14, characterized in that the material has a surface which is a mirror ground surface.
- 20. (new) The analysis method of impurities and color centers in fluoride of any one of claim 14, characterized in that the irradiation is conducted for a period of time of 5 minutes or longer.
- 21. (new) The analysis method of impurities and color centers in fluoride of any one of claim 14, characterized in that the X-rays are provided at an acceleration voltage of 20kV or higher and an electric current of 10mA or more.
- 22. (new) The analysis method of impurities and color centers in fluoride of any one of claim 14, characterized in that the X-ray irradiation is conducted multiple times.
- 23. (new) A production method of a single crystal growth oriented material, characterized in that the method comprises the steps of:

in a melt process as a pre-process for a growth process of a single crystal comprising fluoride, taking a part out of the fluoride in a fused state, and bringing the part into an analysis specimen;

analyzing impurities and color centers of the analysis specimen by the analysis method of any one of 14; and

determining an additive condition of a scavenger based on a result of the analysis.